

100

102 104 106

	Multiplication Terms	=	Calculation Results for p=11101 & q=10111	Calculation Results for p=11101 & q=10010
107	S(0)	=	000000000	000000000
	$q_4 * p * x^4$	=	111010000 131	111010000 132
108	$q_4 * p * x^4 + S(0) = S(1)$	=	111010000	111010000
	$q_3 * p * x^3$	=	000000000 127	000000000 128
109	$q_3 * p * x^3 + S(1) = S(2)$	=	111010000	111010000
	$q_2 * p * x^2$	=	001110100 123	000000000 124
110	$q_2 * p * x^2 + S(2) = S(3)$	=	110100100	111010000
	$q_1 * p * x$	=	000111010 119	000111010 120
111	$q_1 * p * x + S(3) = S(4)$	=	110011110	111101010
	$q_0 * p * x^0$	=	000011101 115	000000000 116
112	$q_0 * p * x^0 + S(4) = S(5)$	=	110000011 135	111101010 136

Fig. 1A PRIOR ART

150

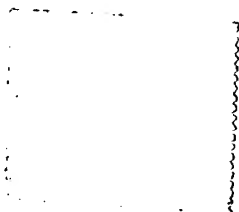
$$\begin{array}{r}
 11101 = p \\
 \times 10111 = q \\
 \hline
 000011101 - 115 \\
 000111010 - 119 \\
 001110100 - 123 \\
 000000000 - 127 \\
 111010000 - 131 \\
 \hline
 110000011 - 135
 \end{array}$$

Fig. 1B PRIOR ART

170

$$\begin{array}{r}
 11101 = p \\
 \times 10010 = q \\
 \hline
 000000000 - 116 \\
 000111010 - 120 \\
 000000000 - 124 \\
 000000000 - 128 \\
 111010000 - 132 \\
 \hline
 111101010 - 136
 \end{array}$$

Fig. 1C PRIOR ART



200

202 204 206

	Remainder Terms	=	Calculation Results for p=11101, q=10111 and g=10010	Calculation Results for p=11101, q=10010 and g=10010
208	$S(5)=S(M)=Z(1)$	=	110000011-210	111101010-212
	$Z(1)_8 * g * x^3$	=	100101000	100101000
214	$Z(1)_8 * g * x^3 + Z(1) = Z(2)$	=	010101011	011000010
	$Z(2)_7 * g * x^2$	=	010010100	010010100
220	$Z(2)_7 * g * x^2 + Z(2) = Z(3)$	=	000111111	001010110
	$Z(3)_6 * g * x$	=	000000000	001001010
226	$Z(3)_6 * g * x + Z(3) = Z(4)$	=	000111111	000011100
	$Z(4)_5 * g * x^0$	=	000100101	000000000
232	$Z(4)_5 * g * x^0 + Z(4) = Z(5)$	=	000011010	000011100
	The GF product	=	11010 $\rightarrow x^4+x^3+x$	11100 $\rightarrow x^4+x^3+x^2$

240 242

Fig. 2 PRIOR ART

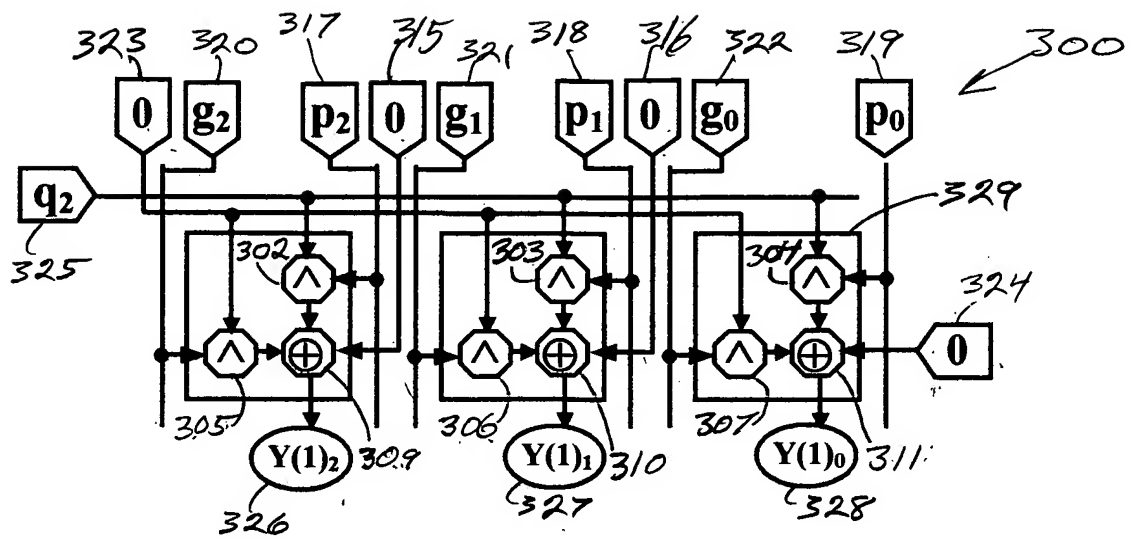


Fig. 3A

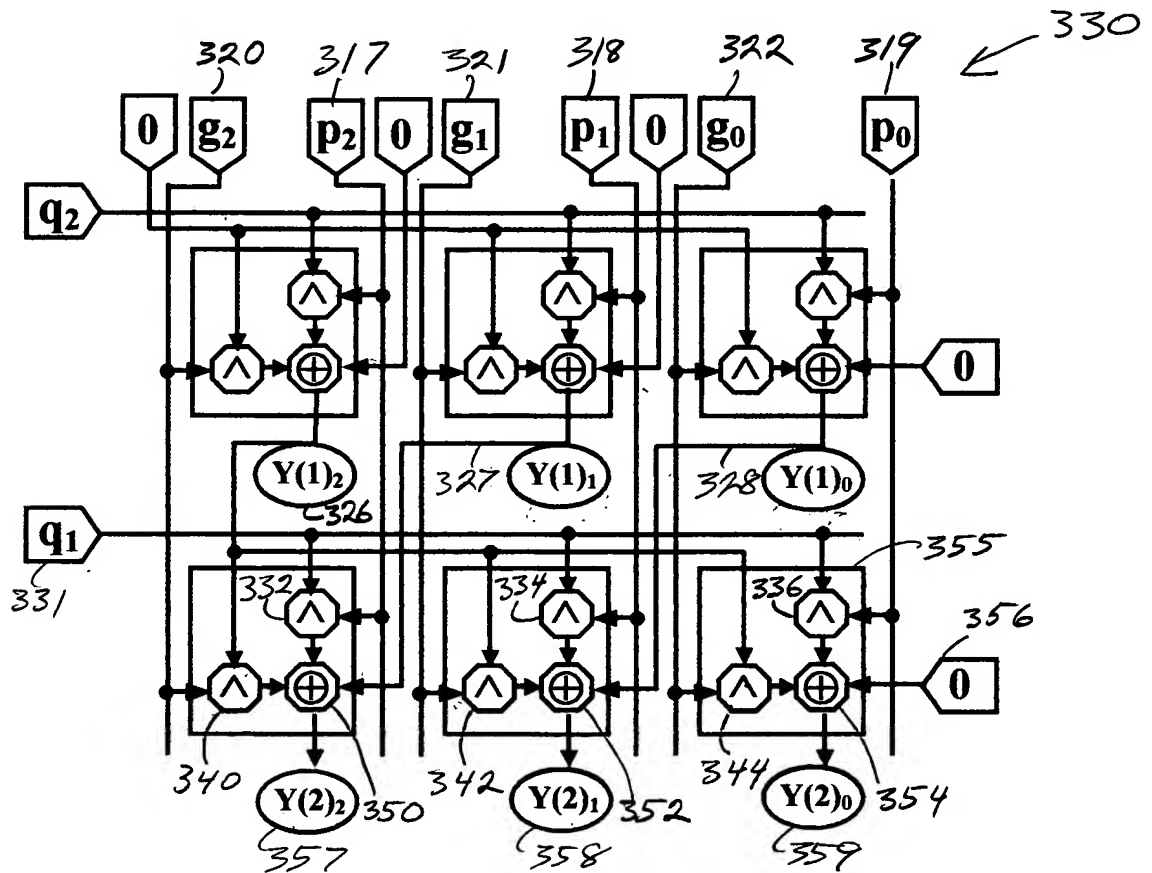


Fig. 3B

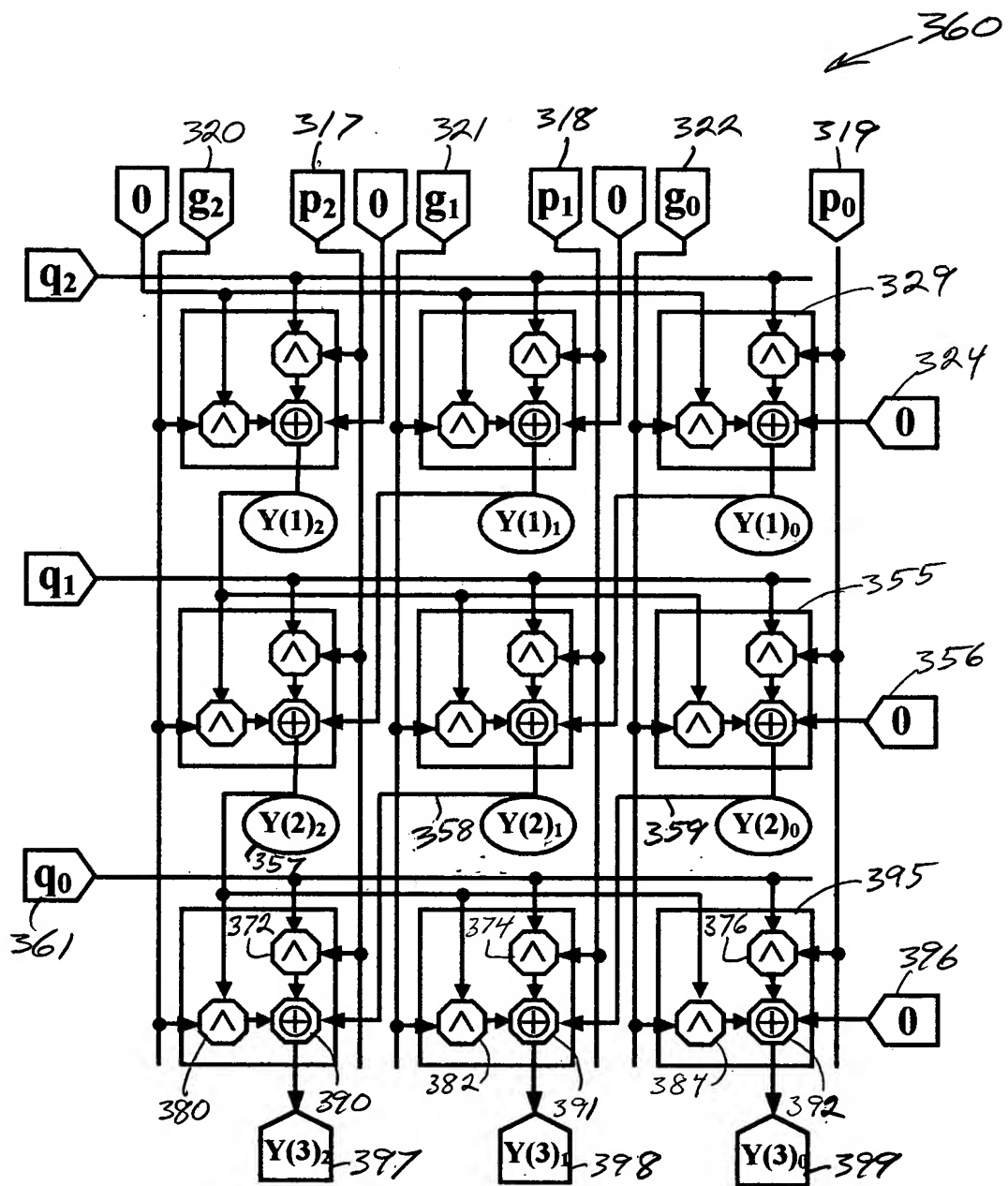


Fig. 3C

400

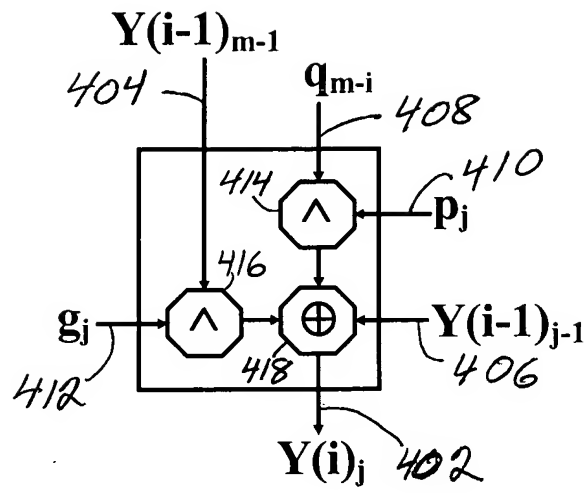


Fig. 4

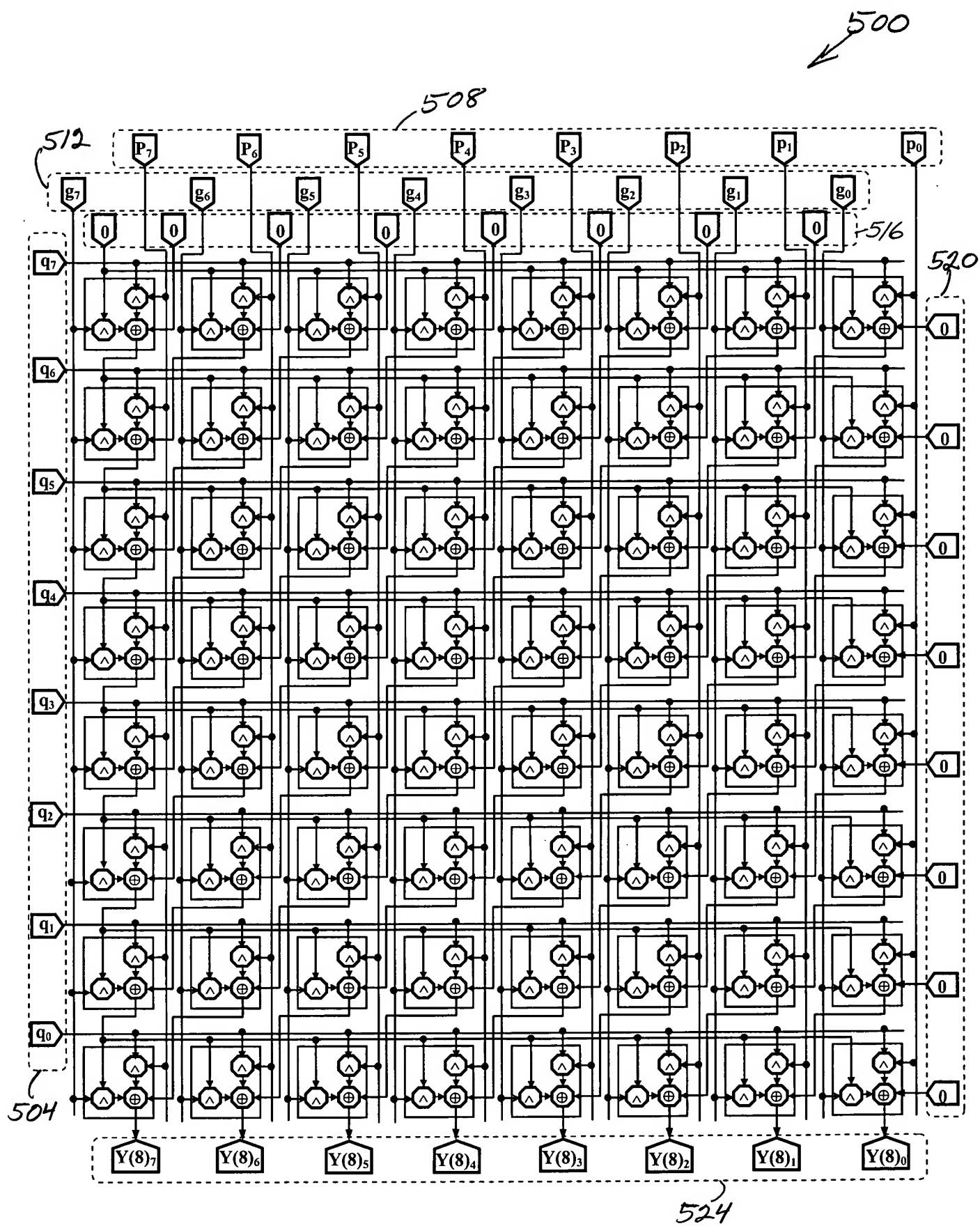
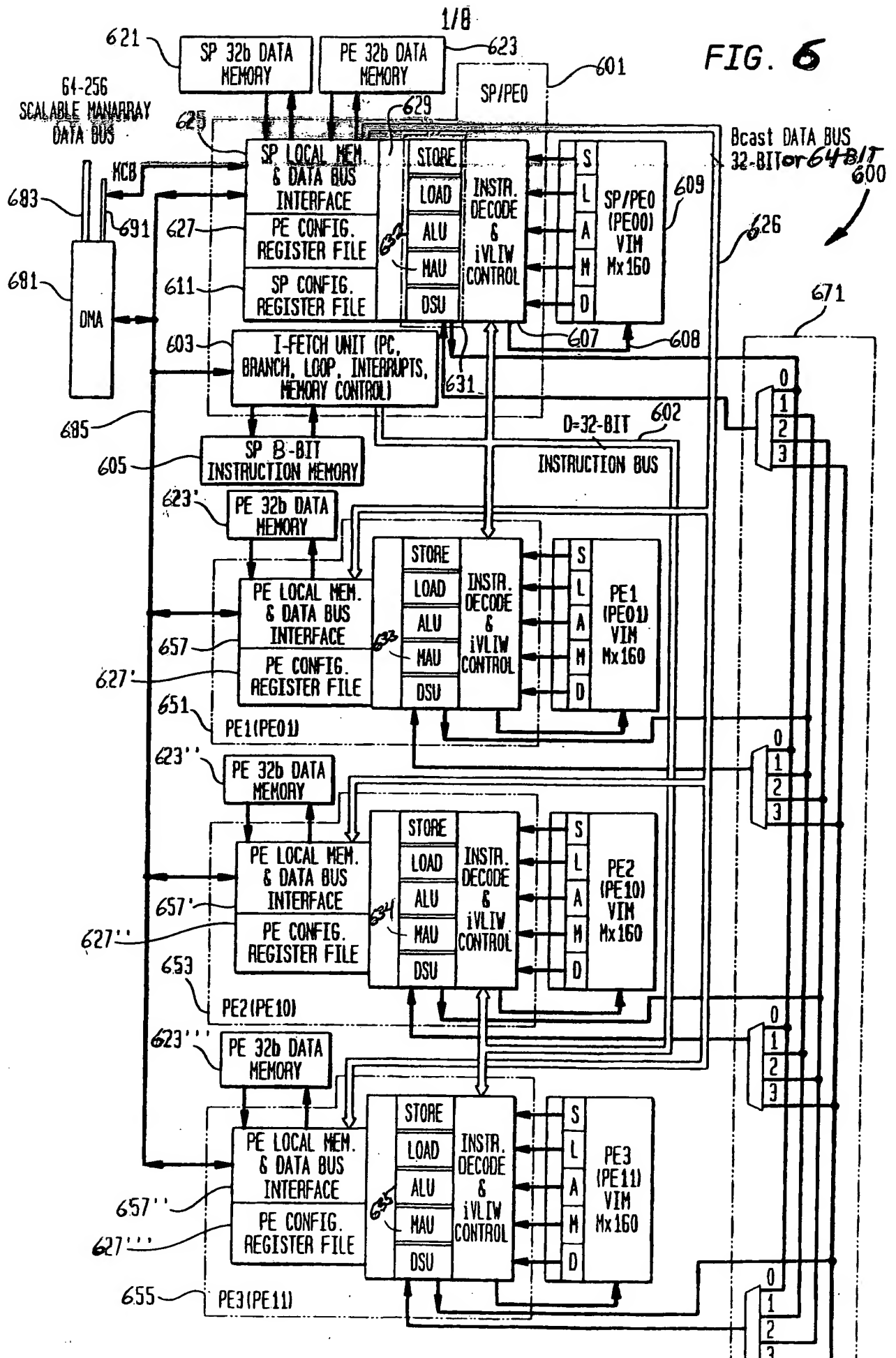


Fig. 5

FIG. 6



31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Group	S/P	Unit	MPYGF opcode	Rt			Rx				Ry			0	CE2	MPack															
				Rte	0	Rxe		0			0																				

Fig. 7A

750
↙

Syntax/Operation			
Instruction	Operands	Operation	ACF
Quad Bytes			
752 { MPYGF.[SP]M.4UB	Rt, Rx, Ry	Rt.B3 ← rem(Rx.B3 * Ry.B3 / PSR.B0)	None
		Rt.B2 ← rem(Rx.B2 * Ry.B2 / PSR.B0)	
		Rt.B1 ← rem(Rx.B1 * Ry.B1 / PSR.B0)	
		Rt.B0 ← rem(Rx.B0 * Ry.B0 / PSR.B0)	
[TF].MPYGF.[SP]M.4UB	Rt, Rx, Ry	Do operation only if T/F condition is satisfied in F0	None
Octal bytes			
754 { MPYGF.[SP]M.8UB	Rte, Rxe, Rye	Rte.B3 ← rem(Rxe.B3 * Rye.B3 / PSR.B0)	None
		Rte.B2 ← rem(Rxe.B2 * Rye.B2 / PSR.B0)	
		Rte.B1 ← rem(Rxe.B1 * Rye.B1 / PSR.B0)	
		Rte.B0 ← rem(Rxe.B0 * Rye.B0 / PSR.B0)	
		Rto.B3 ← rem(Rxo.B3 * Ryo.B3 / PSR.B0)	
		Rto.B2 ← rem(Rxo.B2 * Ryo.B2 / PSR.B0)	
		Rto.B1 ← rem(Rxo.B1 * Ryo.B1 / PSR.B0)	
		Rto.B0 ← rem(Rxo.B0 * Ryo.B0 / PSR.B0)	
[TF].MPYGF.[SP]M.8UB	Rte, Rxe, Rye	Do operation only if T/F condition is satisfied in F0	None

Fig. 7B